

IN THE CLAIMS:

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~striketrough~~. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

Please CANCEL claims 1-19 and ADD new claims 20-38 in accordance with the following:

1-19. (cancelled)

20. (new) A method for synchronizing a radio communication system divided into radio cells, comprising:

transmitting data using a multiple access method, each radio cell having a base station for providing radio coverage to a plurality of mobile stations assigned to the radio cell and the base station;

selecting a pilot signal at each base station and transmitting the pilot signal to the mobile stations assigned to the the base station in a downlink transmission;

transmitting the received pilot signal to the base station from the mobile stations assigned to the base station, in an uplink transmission ;

receiving at the base station pilot signals from the mobile stations assigned to the base station and pilot signals from mobile stations assigned to adjacent radio cells; and

using the pilot signals received to determine a synchronization value for a time synchronization and/or a frequency synchronization, to which the base station synchronizes itself.

21. (new) The method according to claim 20, wherein

at least one of the mobile stations receives the pilot signal from the base station to which the mobile station is assigned and receives pilot signals from base stations of adjacent radio cells, and

the mobile station uses the received pilot signals to determine a synchronization value for a time synchronization and/or for a frequency synchronization, to which the mobile station synchronizes itself.

22. (new) The method according to claim 20, wherein the pilot signal is selected by the base station in a random manner and/or the pilot signal is transmitted by the mobile stations assigned to the base station in an uplink transmission such that a cumulative increase in signal level for the pilot signal is experienced at the base station, the base station selecting the pilot signal for which the cumulative increase in signal level is experienced.

23. (new) The method according to claim 20, wherein a time slot multiple access method and/or a frequency multiple access method is used for data transmission.

24. (new) The method according to claim 20, wherein
a time slot multiple access method is used for data transmission frame-by-frame,
different pilot signals are used,
the pilot signals alternate frame-by-frame.

25. (new) The method according to claim 23, wherein in the case of the time slot multiple access method with data transmission frame by frame, the pilot signal is transmitted at the end of the frame.

26. (new) The method according to one of claims 23, wherein
different pilot signals are used, and
the same time slots and/or same frequencies are used for transmitting the different pilot signals .

27. (new) The method according to claim 20,
wherein an OFDM data transmission method is used for data transmission and at least two pilot signal subcarriers are used for pilot signal transmission.

28. (new) The method according to claim 27, wherein
at least two different pilot signals are used, and
when a time slot multiple access method with frame by frame data transmission is used,
the different pilot signals are alternately sent by alternating pilot signal subcarriers frame by frame.

29. (new) The method according to claim 27, wherein when a time slot multiple access method with frame by frame data transmission is used, pilot signal transmission takes place at the end of the frame.

30. (new) The method according to claim 28, wherein the base station transmits pilot signals using directly adjacent pilot signal subcarriers .

31. (new) The method according to 28, wherein the pilot signals are formed respectively by at least two successive symbols and the successive symbols are transmitted by the pilot signal subcarriers.

32. (new) The method according to claim 31, wherein during pilot signal transmission no further symbols are transmitted by further available subcarriers.

33. (new) The method according to claim 31., wherein

- a time deviation is determined based on a phase rotation established between received symbols of different pilot signal subcarriers and/or
- a frequency deviation is determined based on a phase rotation established between successive symbols of a pilot signal subcarrier.

34. (new) The method according to claim 20, wherein data transmission is performed using a time division duplex radio transmission standard or a frequency division duplex radio transmission standard.

35. (new) A base station assigned to a radio cell for synchronizing a radio communication system divided into radio cells, comprising:

- transmission means for transmitting data using a multiple access method, the data being transmitted to a plurality of mobile stations assigned to the radio cell of the base station;
- selection means for selecting a pilot signal at the base station and transmitting the pilot signal to the mobile stations assigned to the base station in a downlink transmission;
- receiving means for receiving return pilot signals transmitted in an uplink direction to the base station from the mobile stations assigned to the base station and mobile stations assigned to adjacent radio cells; and

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synchronization means to synchronize the base station using the pilot signals received and a determined time synchronization and/or frequency synchronization value.

36. (new) A mobile station, characterized by means for implementing the method according to claim 21 .

37. (new) A radio communication system, comprising at least one base station according to claim 35 .

38. A radio communication system, comprising at least one mobile station according to claim 36 .